

WE CLAIM:

- 1 1. A computer-based automated method for tracking the movement of masks used in
2 a wafer processing facility, the masks being moved in mask pods, the method
3 comprising:
4 for each mask, generating mask data that includes a mask identification code; and
5 using a computer to process the mask data, including cross-referencing respective
6 mask identification codes to pod identification codes, and updating the mask data to
7 include a facility location identification code.
- 1 2. The method of claim 1, wherein said updating occurs as each mask moves to a
2 subsequent location during wafer processing and said updating includes adding a tool
3 identification code to the mask data set when the mask arrives to a tool location.
- 1 3. The method of claim 2, after said updating, further including: creating a historical
2 database for the mask data corresponding to each mask and tracking the movement of
3 each mask when the mask arrives to a new location.
- 1 4. The method of claim 1, after the updating step, further including the step of
2 providing a material control system that sends a selected mask to a new location, thereby
3 triggering an update of the mask data set for the selected mask when the mask arrives to
4 the new location.
- 1 5. The method of claim 1, further including: storing mask data.
- 1 6. The method of claim 5, wherein storing mask data includes: using the computer
2 arrangement to track the condition of each mask, the mask condition including particle
3 contamination, mask degradation, number of exposures, number of times mask is handled
4 and mask structural defects /wherein the masks are selected from the group consisting of
5 reticles, wafer processing masks and solder bump masks.

 1004002-1004
 1004002-1004

 Sub
 A1

1 7. The method of claim 6, wherein the masks are selected from the group consisting
2 of: reticles, wafer processing masks and solder bump masks.

Sub A2
1 8. The method of claim 6, wherein said storing mask data includes: using the
2 computer arrangement to match a reticle serial number and a wafer lot to an event on a
3 processing line and storing match data as part of the mask data set.

1 9. The method of claim 1, further including matching the mask to a carrier, the
2 carrier having a carrier identification code, and storing the carrier code data as part of the
3 mask data.

1 10. The method of claim 1, further including tracking the mask movement from a
2 material stocker, through a stepper and through an inspection tool while in the pod.

1 11. A system for tracking the movement of masks used in a wafer processing facility,
2 the masks being moved in mask pods, the system comprising:
3 for each mask, means for generating mask data that includes a mask identification
4 code; and
5 computer means for processing the mask data, including cross-referencing
6 respective mask identification codes to pod identification codes, and updating the mask
7 data to include a facility location identification code.

1 12. The system of claim 11, further including a material handling system adapted to
2 move the masks and mask pods to multiple locations in the wafer processing facility.

Sub A3
1 13. The system of claim 10, wherein the mask data set further includes a tool
2 identification code, generated when the mask arrives to a new tool location, that is stored
3 in the computer arrangement.

- 1 14. A computer-based automated method for tracking the movement of masks used in
2 a wafer processing facility, the masks being moved in mask pods, the method
3 comprising:
4 for each mask, generating mask data that includes a mask identification code;
5 using a computer to process the mask data, including cross-referencing respective
6 mask identification codes to pod identification codes, and updating the mask data to
7 include a facility location identification code;
8 conducting a degradation analysis on each mask that includes a comparison of the
9 mask data to a mask baseline specification so as to generate degradation data for each
10 mask; and
11 analyzing and tracking the mask degradation data to determine the useful life of
12 each mask.
- 1 15. The method of claim 14, further including: tracking an event associated with a
2 select wafer lot, the event tracking including matching the mask identification code with
3 the select wafer lot.

T04021-270001